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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/532,117

04/21/2005

Ulrich Hochberg

2923-702

4269

6449

7590

09/14/2010

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EXAMINER

HENKEL, DANIELLE B

ART UNIT

PAPER NUMBER

1797

NOTIFICATION DATE

DELIVERY MODE

09/14/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTO-PAT-Email@rfem.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/532,117	<b>Applicant(s)</b> HOCHBERG ET AL.	
	<b>Examiner</b> DANIELLE HENKEL	<b>Art Unit</b> 1797	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 July 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 and 12-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Amendment*

1. The amendment filed 7/2/2010 has been entered and fully considered.
2. Claims 1-10 and 12-40 remain pending.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, 3, 12-15, 22-26, 28, 34-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over MULLER (US 4287304) in view of DAHLSTROM (US 4309254) and further in view of CHRISTENSEN (US 2225428).

a. With respect to claim 1, MULLER teaches an apparatus for producing alcohol from raw materials comprising a grinding station (mill) that grinds to flour at least the grain comprising a starch (Column 4, lines 18-34), a liquefaction station (hydrolysis) which digests flour to a liquefied raw material (Column 4, lines 32-35), a fermentation station (Column 3, lines 28-34), a distillation station comprising a distillation column (Column 6, lines 20-25), and a drying station configured to drying vinasse as a residue from distilling (Column 6, lines 35-38). MULLER also teaches the grinding station (mill) which separates (separator) at least a part of the seed coat portions (hulls) (Column 4, lines 18-26) and that the dry wastes of the milling station (seed coats) can be fed (feeder) to the liquid wastes of the alcohol production to provide an animal feed (Column 5, lines 33-37) and that the wastes are subjected (fed directly) to a drying operation to be used as animal feed (Column 6, lines 35-38). Therefore it would be obvious to one of ordinary skill in the art at the time of the invention to subject both sources of waste (i.e. seed coats and vinasse) to the drying station to create the animal feed. MULLER further teaches the drying station comprises a drier which carries out the final drying of the vinasse as a residue in the distillation station (Column

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6, lines 35-38). MULLER does not explicitly disclose the drying dew point temperature above 95 degrees, however the drying station could be configured to any optimal temperature. Additionally it would have been obvious to one of ordinary skill in the art at the time of the invention to dry at the disclosed temperatures, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. MULLER also does not disclose the drier producing exhaust vapor permitting the distillation of alcohol. However, DAHLSTROM teaches an alcohol recovery process wherein the vapor recovered from the dryer proceeds to the distillation column (Column 5, lines 7-8). At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the alcohol producing apparatus of MULLER to include the exhaust vapor of the drier heating the distillation column as taught by DAHLSTROM because it allows for a 25% savings in steam consumption due to the recycling of the exhaust vapor (Column 2, lines 49-53). MULLER and DAHLSTROM do not explicitly disclose the dry seed portions are fed directly from the grinding station to a drying station to function as a carrier medium. However, CHRISTENSEN discloses a method for recovery of unfermentable residues comprising feeding dried particles (dry seed coats) to a flash drier as a carrier material for protein syrup (Column 2, lines 35-52 and Column 10, lines 5-35). At the time of the invention it would have been obvious to one ordinary skill in the art to modify the apparatus of MULLER and DAHLSTROM to include the

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dried particles being fed to a drier as a carrier material for a syrup as taught by CHRISTENSEN because it overcomes the problems of the syrup sticking to the inside of the dryer drum and non-uniform drying of the product (Column 2, lines 19-32) while allowing the particles to be quickly and uniformly dried down in a minimum time (Column 3, lines 18-25).

b. With respect to claim 3, MULLER teaches a grinding station that grinds cereals to flour (Column 3, lines 28-34), but does not explicitly disclose grinding the flour to a mean particle size between 0.5 and 1 mm. It would have been obvious to one of ordinary skill in the art at the time of the invention to chose the disclosed particle size, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

c. With respect to claim 12, DAHLSTROM teaches the drier produces essentially air-free exhaust vapor (live steam, reboil steam) (Column 5, lines 11-14).

d. With respect to claim 13, DAHLSTROM teaches the drier is constructed as a superheated steam drier (Column 4, lines 66-67).

e. With respect to claim 14, MULLER does not explicitly disclose the distillation station has a first and second column and a dehydration station. However, DAHLSTROM teaches the distillation station has a first distillation column which is heated by exhaust vapor of the drying station (Column 5, lines 7-8) to which is connected a dehydration station (evaporator) (Column 2, lines 18-

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20). DAHLSTROM also teaches a second distillation column is connected at an intermediate level of the first column (Figure 1, Column 4, lines 30-33) and is heated via a heat exchanger by heat from the dehydration station (Column 4, lines 30-35). At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the alcohol production apparatus of MULLER to include the distillation and dehydration station arrangement as taught by DAHLSTROM because it reduces the overall energy required to produce alcohol by recycling the steam in the system and reducing the cooling water needed in the distillation section because the cooling duties are recovered during dehydration (Column 5, lines 16-43).

f. With respect to claim 15, DAHLSTROM teaches the heat exchanger is a falling film evaporator heated by the dehydration station (Column 3, lines 28-30).

g. With respect to claim 22, the means for language used in claim 22 invokes 35 U.S.C. 112 6th paragraph interpretation such that the means for grinding consists of a milling station (Page 9, lines 24-25), the means for digesting consists of a liquefaction station (Page 10, lines 4-5), the means for fermenting consists of a fermentation station (Page 10, line 29). However, the means for language of means for feeding in claim 22 invokes 35 U.S.C. 112 6<sup>th</sup> paragraph interpretation as well, but there are no specified means for feeding provided in the specification, which merely describes seed coats are fed to the drier (Page 12, line 2), therefore the Examiner must use broadest reasonable interpretation of the claim language. MULLER teaches an apparatus for producing alcohol from

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raw materials comprising a grinding station (mill) that grinds raw material into a flour (Column 4, lines 18-34) and separating at least a part of the seed coat portions (hulls) (Column 4, lines 18-26), a liquefaction station (hydrolysis) which digests flour to a liquefied raw material (Column 4, lines 32-35), a fermentation station (Column 3, lines 28-34), a distillation station (Column 6, lines 20-25), and a drying station comprising a drier for drying vinasse as a residue from the distillation station (Column 6, lines 35-38). MULLER also the dry wastes of the milling station (seed coats) can be fed to the liquid wastes of the alcohol production (vinasse) to provide an animal feed (Column 5, lines 33-37) and that the wastes are subjected to a drying operation to be used as animal feed (Column 6, lines 35-38). Therefore it would be obvious to one of ordinary skill in the art at the time of the invention to subject both sources of waste (i.e. seed coats and vinasse) to the drying station to create the animal feed. MULLER does not explicitly disclose the drying dew point temperature above 95 degrees. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to dry at the disclosed temperatures, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. MULLER also does not disclose the drier producing an exhaust vapor for heating the distillation column. However, DAHLSTROM teaches an alcohol recovery process wherein the vapor recovered from the dryer proceeds to the distillation column (Column 5, lines 7-8). At the time of the invention it



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would have been obvious to one of ordinary skill in the art to modify the alcohol producing apparatus of MULLER to include the exhaust vapor of the drier heating the distillation column as taught by DAHLSTROM because it allows for a 25% savings in steam consumption due to the recycling of the exhaust vapor (Column 2, lines 49-53). MULLER and DAHLSTROM do not explicitly disclose the dry seed portions are fed directly from the grinding station to a drying station to function as a carrier medium. However, CHRISTENSEN discloses a method for recovery of unfermentable residues comprising feeding dried particles (dry seed coats) to a flash drier as a carrier material for protein syrup (Column 2, lines 35-52 and Column 10, lines 5-35). At the time of the invention it would have been obvious to one ordinary skill in the art to modify the apparatus of MULLER and DAHLSTROM to include the dried particles being fed to a drier as a carrier material for a syrup as taught by CHRISTENSEN because it overcomes the problems of the syrup sticking to the inside of the dryer drum and non-uniform drying of the product (Column 2, lines 19-32) while allowing the particles to be quickly and uniformly dried down in a minimum time (Column 3, lines 18-25).

h. With respect to claim 23, MULLER a drier which carries out the final drying of the vinasse as a residue in the distillation station (Column 6, lines 35-38).

MULLER does not explicitly disclose the drying dew point temperature above 95 degrees and preferably between 100 and 105 degrees Celsius. It would have been obvious to one of ordinary skill in the art at the time of the invention to dry at the disclosed temperatures, since it has been held that where the general

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conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

i. With respect to claim 24, DAHLSTROM discloses a conduit (line) for exhaust vapor connecting the drying station to the distillation station (Column 5, lines 7-8).

j. With respect to claim 25, it would have been obvious to one of ordinary skill in the art to use all the exhaust vapor of the drier in the distillation column so as to not waste excess exhaust vapor and minimize energy consumption.

k. With respect to claim 26, MULLER teaches a process for producing alcohol from raw materials comprising a grinding (mill) to flour at least the grain comprising a starch (Column 4, lines 18-34), liquefying the flour with enzymes (hydrolysis), digesting flour to a liquefied raw material (Column 4, lines 32-35), fermenting (Column 3, lines 28-34), providing a distillation station comprising a distillation column (Column 6, lines 20-25), drying vinasse formed as a residue from distilling (Column 6, lines 35-38). MULLER also teaches the grinding station (mill) separating at least a part of the seed coat portions (hulls) (Column 4, lines 18-26) and feeding the dry wastes of the milling station (seed coats) to the liquid wastes of the alcohol production to provide an animal feed (Column 5, lines 33-37) and that the wastes are subjected (fed directly) to a drying operation to be used as animal feed (Column 6, lines 35-38). Therefore it would be obvious to one of ordinary skill in the art at the time of the invention to subject both sources of waste (i.e. seed coats and vinasse) to the drying station to create the animal

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feed. MULLER further teaches the drying station comprises a drier which carries out the final drying of the vinasse as a residue in the distillation station (Column 6, lines 35-38). MULLER does not explicitly disclose the drying dew point temperature above 95 degrees, however the drying station could be configured to any optimal temperature. Additionally it would have been obvious to one of ordinary skill in the art at the time of the invention to dry at the disclosed temperatures, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. MULLER also does not disclose the drier producing exhaust vapor permitting the distillation of alcohol. However, DAHLSTROM teaches an alcohol recovery process wherein the vapor recovered from the dryer proceeds to the distillation column (Column 5, lines 7-8). At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the alcohol producing apparatus of MULLER to include the exhaust vapor of the drier heating the distillation column as taught by DAHLSTROM because it allows for a 25% savings in steam consumption due to the recycling of the exhaust vapor (Column 2, lines 49-53). MULLER and DAHLSTROM do not explicitly disclose the dry seed portions are fed directly from the grinding station to a drying station to function as a carrier medium. However, CHRISTENSEN discloses a method for recovery of unfermentable residues comprising feeding dried particles (dry seed coats) to a flash drier as a carrier material for protein syrup (Column 2, lines 35-52 and Column 10, lines 5-

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35). At the time of the invention it would have been obvious to one ordinary skill in the art to modify the apparatus of MULLER and DAHLSTROM to include the dried particles being fed to a drier as a carrier material for a syrup as taught by CHRISTENSEN because it overcomes the problems of the syrup sticking to the inside of the dryer drum and non-uniform drying of the product (Column 2, lines 19-32) while allowing the particles to be quickly and uniformly dried down in a minimum time (Column 3, lines 18-25).

l. With respect to claim 28, MULLER teaches a grinding station that grinds cereals to flour (Column 3, lines 28-34), but does not explicitly disclose grinding the flour to a mean particle size between 0.5 and 1 mm. It would have been obvious to one of ordinary skill in the art at the time of the invention to chose the disclosed particle size, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

m. With respect to claim 34, DAHLSTROM teaches the drier produces essentially air-free exhaust vapor (live steam, reboil steam) (Column 5, lines 11-14).

n. With respect to claim 35, DAHLSTROM teaches the drier is constructed as a superheated steam drier (Column 4, lines 66-67).

o. With respect to claim 36 and 37, MULLER does not explicitly disclose the distillation station has a first and second column and a dehydration station.

However, DAHLSTROM teaches the distillation station has a first distillation

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column which is heated by exhaust vapor of the drying station (Column 5, lines 7-8) to which is connected a dehydration station (evaporator) (Column 2, lines 18-20). DAHLSTROM also teaches a second distillation column is connected at an intermediate level of the first column (Figure 1, Column 4, lines 30-33) and is heated via a heat exchanger by heat from the dehydration station (Column 4, lines 30-35). At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the alcohol production apparatus of MULLER to include the distillation and dehydration station arrangement as taught by DAHLSTROM because it reduces the overall energy required to produce alcohol by recycling the steam in the system and reducing the cooling water needed in the distillation section because the cooling duties are recovered during dehydration (Column 5, lines 16-43).

p. With respect to claim 38, DAHLSTROM teaches the heat exchanger is a falling film evaporator heated by the dehydration station (Column 3, lines 28-30).

7. Claims 2, 4, 27, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over MULLER (US 4287304), in view of DAHLSTROM (US 4309254) and further in view of CHRISTENSEN (US 2225428) as applied to claims 1, 3, 12-15, 22-26, 28, 34-38 above, and further in view of DENNIS (US 3443958).

a. With respect to claim 2, MULLER does not explicitly disclose the grinding station separates off the seed coat portions in a ratio of seed coats to flour.

However, DENNIS teaches a grinding station (mill) in which there is flexibility in

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the amount of hulls that are eliminated prior to mashing (Column 2, lines 1-6). At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the grinding station of MULLER to include the separation of seed coat portions in a ratio as taught by DENNIS because the seed coat portions (husks) contain components that are responsible for the sharpness or tanginess of the beer and using different ratios of the husks allows for control over the final flavor (Column 1, line 66-Column 2, line 5). DENNIS discloses the control of separating off the seed coat portions in a ratio, but does not explicitly disclose a weight ratio of seed coats to flour of 1 to 9 – 2 to 8. It would have been obvious to one of ordinary skill in the art at the time of the invention to chose the disclosed weight ratios, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

b. With respect to claim 4, MULLER does not explicitly teach the grinding station has a roller or impact jet mill. However DENNIS teaches a grinding station which can be either a rolling mill or impact mill (Column 2, lines 29-30). At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the grinding station of MULLER to include the roller mill or impact mill as taught by DENNIS because these are ordinary mills used to grind cereals finely that have a more successful operation when the seed coats are removed (Column 2, lines 20-30).

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c. With respect to claim 27, MULLER does not explicitly disclose the grinding station separates off the seed coat portions in a ratio of seed coats to flour.

However, DENNIS teaches a grinding station (mill) in which there is flexibility in the amount of hulls that are eliminated prior to mashing (Column 2, lines 1-6). At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the grinding station of MULLER to include the separation of seed coat portions in a ratio as taught by DENNIS because the seed coat portions (husks) contain components that are responsible for the sharpness or tanginess of the beer and using different ratios of the husks allows for control over the final flavor (Column 1, line 66-Column 2, line 5). DENNIS discloses the control of separating off the seed coat portions in a ratio, but does not explicitly disclose a weight ratio of seed coats to flour of 1 to 9 – 2 to 8. It would have been obvious to one of ordinary skill in the art at the time of the invention to chose the disclosed weight ratios, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

d. With respect to claim 29, MULLER does not explicitly teach the grinding station has a roller or impact jet mill. However DENNIS teaches a grinding station which can be either a rolling mill or impact mill (Column 2, lines 29-30). At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the grinding station of MULLER to include the roller mill or impact mill as taught by DENNIS because these are ordinary mills used to grind cereals

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finely that have a more successful operation when the seed coats are removed (Column 2, lines 20-30).

8. Claims 5-8, and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over MULLER (US 4287304), in view of DAHLSTROM (US 4309254) and further in view of CHRISTENSEN (US 2225428) as applied to claims 1, 3, 12-15, 22-26, 28, 34-38 above, and further in view of REICH (US 2343706).

a. With respect to claim 5, MULLER teaches a liquefaction station (hydrolysis) (Column 4, lines 35-36) which has a mixing stage comprising a mixing condenser admixing steam to the product stream of the raw material, a steam-jet injector and admixing superheated steam to the product stream (Column 4, lines 40-54). MULLER does not explicitly disclose an expansion cooler comprising at least one expansion stage. However, REICH teaches an apparatus for producing alcohol in which the liquefaction station includes a mixing condenser admixing steam to the product and an expansion cooler (flash cooler) comprising at least one expansion stage in which expansion vapor of the cooler is admixed to the product (Column 4, lines 42-70). At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the liquefaction station of MULLER to include the expansion cooler as taught by REICH because it allows for cooling the product stream (wort) to the appropriate temperature for fermentation (Column 1, lines 20-22) and the recycling of steam



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from the cooler to inject in the heating stage resulting in a more efficient process (Column 3, lines 3-11).

b. With respect to claim 6, REICH teaches that the expansion cooler is of multistage construction (series of stages) (Column 3, lines 3-20).

c. With respect to claim 7, REICH teaches the expansion cooler has a two stage (series of stages) construction and the mixing condenser (cooker) is of single-stage construction (Column 3, lines 12-20).

d. With respect to claim 8, REICH teaches that the mixing condenser (pre-cooker) heats the product stream to a temperature below the gelatinization temperature of the raw material and the steam-jet injector heats the product stream to a temperature above the gelatinization temperature of the raw material (Column 4, lines 30-60).

e. With respect to claims 30 and 31, MULLER teaches a liquefaction station (hydrolysis) (Column 4, lines 35-36) which has a mixing stage comprising a mixing condenser admixing steam to the product stream of the raw material, a steam-jet injector and admixing superheated steam to the product stream (Column 4, lines 40-54).

9. Claims 9-10, and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over MULLER (US 4287304) in view of DAHLSTROM (US 4309254) and further in view of CHRISTENSEN (US 2225428) as applied to claims 1, 3, 12-15, 22-26, 28, 34-38 above, and further in view of PRENTICE (US 4328317).

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- a. With respect to claim 9, MULLER does not explicitly disclose a degassing station between the fermentation and distillation stations. However, PRENTICE teaches an alcohol production apparatus with a vertically standing degassing conduit or tube between the fermentation and distillation stations (Column 9, lines 58-64). At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the alcohol production apparatus of MULLER to include the degassing section as taught by PRENTICE because it is necessary to draw off the carbon dioxide by product of fermentation in order to favor the reactions (Column 5, lines 51-58).
- b. With respect to claim 10, PRENTICE teaches the mash is preheated under pressure and heat (heat exchanger) to allow for degassing (Column 10, lines 40-55).
- c. With respect to claim 32, MULLER does not explicitly disclose a degassing station between the fermentation and distillation stations. However, PRENTICE teaches an alcohol production apparatus with a vertically standing degassing conduit or tube between the fermentation and distillation stations (Column 9, lines 58-64). At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the alcohol production apparatus of MULLER to include the degassing section as taught by PRENTICE because it is necessary to draw off the carbon dioxide by product of fermentation in order to favor the reactions (Column 5, lines 51-58).

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d. With respect to claim 33, PRENTICE teaches the mash is preheated under pressure and heat (heat exchanger) to allow for degassing (Column 10, lines 40-55).

10. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over MULLER (US 4287304), in view of DAHLSTROM (US 4309254) and further in view of CHRISTENSEN (US 2225428), as applied to claims 1, 3, 12-15, 22-26, 28, 34-38 above, and further in view of GINDER (US 4407662).

a. With respect to claim 16, neither MULLER nor DAHLSTROM explicitly disclose the dehydration station comprises a molecular sieve. However, GINDER teaches the dehydration of alcohol comprising a molecular sieve (Column 2, lines 22-45). At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the dehydration station of MULLER and DAHLSTROM to include the molecular sieve as taught by GINDER because it provides a practical and efficient low energy process for concentrating alcohol (Column 1, lines 65-67).

b. With respect to claim 17, GINDER teaches the molecular sieve is operated at a pressure of 1.7 bar absolute or more (2-10 psig) (Column 3, lines 18-19).

11. Claims 18-19 and 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over MULLER (US 4287304), in view of DAHLSTROM (US 4309254) and

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further in view of CHRISTENSEN (US 2225428), as applied to claims 1, 3, 12-15, 22-26, 28, 34-38 above, and further in view of STOLTENBURG (US 3968739).

a. With respect to claim 18, MULLER does not explicitly disclose the distillation station is connected to a dehydration station. However, DAHLSTROM teaches the distillation station has a first distillation column which is connected to a dehydration station (evaporator) (Column 2, lines 18-20). DAHLSTROM also teaches heat from the dehydration station can be directed to multiple portions of the system to provide recycled heat, which could include a vinasse evaporator (Column 4, lines 30-35). At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the alcohol production apparatus of MULLER to include the distillation and dehydration station arrangement as taught by DAHLSTROM because it reduces the overall energy required to produce alcohol by recycling the steam in the system and reducing the cooling water needed in the distillation section because the cooling duties are recovered during dehydration (Column 5, lines 16-43). Neither MULLER nor DAHLSTROM teaches the drying station comprises a separator. However, STOLTENBURG teaches a vinasse processing apparatus in which comprises a separator (decanter) which separates the vinasse solids and vinasse thin juice (clear phase) (Column 3, lines 51-64), and an evaporator (vaporizer) that evaporates the vinasse thin juice to form vinasse thick juice (Column 4, lines 10-13), and a drier which dries the vinasse thick juice and solids together (Column 4, lines 42-50). At the time of the invention it would have been obvious to one of ordinary

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skill in the art to modify the alcohol producing apparatus of MULLER and DAHLSTROM to include the vinasse processing apparatus as taught by STOLTENBURG because it provides a continual and economic means of drying vinasse without the use of excess energy (Column 1, lines 40-53).

b. With respect to claim 19, STOLTENBURG teaches the evaporator comprises a pre-evaporator and a final evaporator (multiple phases down fall vaporizer) (Column 4, lines 10-12). DAHLSTROM also teaches heat from the dehydration station can be directed to multiple portions of the system to provide recycled heat, which could include a vinasse final evaporator (Column 4, lines 30-35).

c. With respect to claims 39 and 40, Neither MULLER nor DAHLSTROM teaches the drying station comprises a separator. However, STOLTENBURG teaches a vinasse processing apparatus in which comprises a separator (decanter) which separates the vinasse solids and vinasse thin juice (clear phase) (Column 3, lines 51-64), and an evaporator (vaporizer) that evaporates the vinasse thin juice to form vinasse thick juice (Column 4, lines 10-13), and a drier which dries the vinasse thick juice and solids together (Column 4, lines 42-50). At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the alcohol producing apparatus of MULLER and DAHLSTROM to include the vinasse processing apparatus as taught by STOLTENBURG because it provides a continual and economic means of drying vinasse without the use of excess energy (Column 1, lines 40-53).

12. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over MULLER (US 4287304), in view of DAHLSTROM (US 4309254), in view of CHRISTENSEN (US 2225428) in view of STOLTENBURG (US 3968739) as applied to claims 18-19 and 39-40 above and further in view of GINDER (US 4407662).

a. With respect to claim 20, neither MULLER nor DAHLSTROM nor STOLTENBURG explicitly disclose the dehydration station comprises a molecular sieve. However, GINDER teaches the dehydration of alcohol comprising a molecular sieve (Column 2, lines 22-45). At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the dehydration station of MULLER, DAHLSTROM, and STOLTENBURG to include the molecular sieve as taught by GINDER because it provides a practical and efficient low energy process for concentrating alcohol (Column 1, lines 65-67).

b. With respect to claim 21, GINDER teaches the molecular sieve is operated at a pressure of 1.7 bar absolute or more (2-10 psig) (Column 3, lines 18-19).

### ***Response to Arguments***

13. Applicant's arguments filed 7/2/2010 have been fully considered but they are not persuasive.

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14. Applicant's argument on Pages 14-15, that the drier of DAHLSTROM does not provide enough vapor for heating has been noted and considered, but is not persuasive. The teachings of DAHLSTROM are considered to meet the language of the claims that the vapor of the drier permits heating the distillation column. DAHLSTROM teaches an alcohol recovery process wherein the vapor recovered from the dryer proceeds to the distillation column (Column 5, lines 7-8). At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the alcohol producing apparatus of MULLER to include the exhaust vapor of the drier heating the distillation column as taught by DAHLSTROM because it allows for a 25% savings in steam consumption due to the recycling of the exhaust vapor (Column 2, lines 49-53). While DAHLSTROM does disclose that additional vapor can be used to aid the distillation, DAHLSTROM does not disclose the actual heating is provided by this additional vapor as cited by applicants. As the limitations are not exclusively that only the vapor from the drier is used to heat the distillation columns, the prior art of DAHLSTROM is considered to meet the language by allowing distillation with the heat from the dryer.

15. It is to be noted that applicants fail to specifically argue the combination, as applied, and fail to provide evidence showing why the references can not be combined as defined in the action.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIELLE HENKEL whose telephone number is

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(571)270-5505. The examiner can normally be reached on Mon-Thur: 11am-8pm,  
Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Marcheschi can be reached on 571-272-1374. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/DANIELLE HENKEL/  
Examiner, Art Unit 1797

/William H. Beisner/  
Primary Examiner, Art Unit 1797